



Volunteer Lake Assessment Program Individual Lake Reports

PEARLY LAKE, RINDGE, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	2,560	Max. Depth (m):	5.4	Flushing Rate (yr ⁻¹)	4.4
Surface Area (Ac.):	142	Mean Depth (m):	1.7	P Retention Coef:	0.59
Shore Length (m):	5,800	Volume (m ³):	1,357,500	Elevation (ft):	1006

TROPHIC CLASSIFICATION

Year	Trophic class
1990	EUTROPHIC
2004	EUTROPHIC

KNOWN EXOTIC SPECIES

Variable Milfoil

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

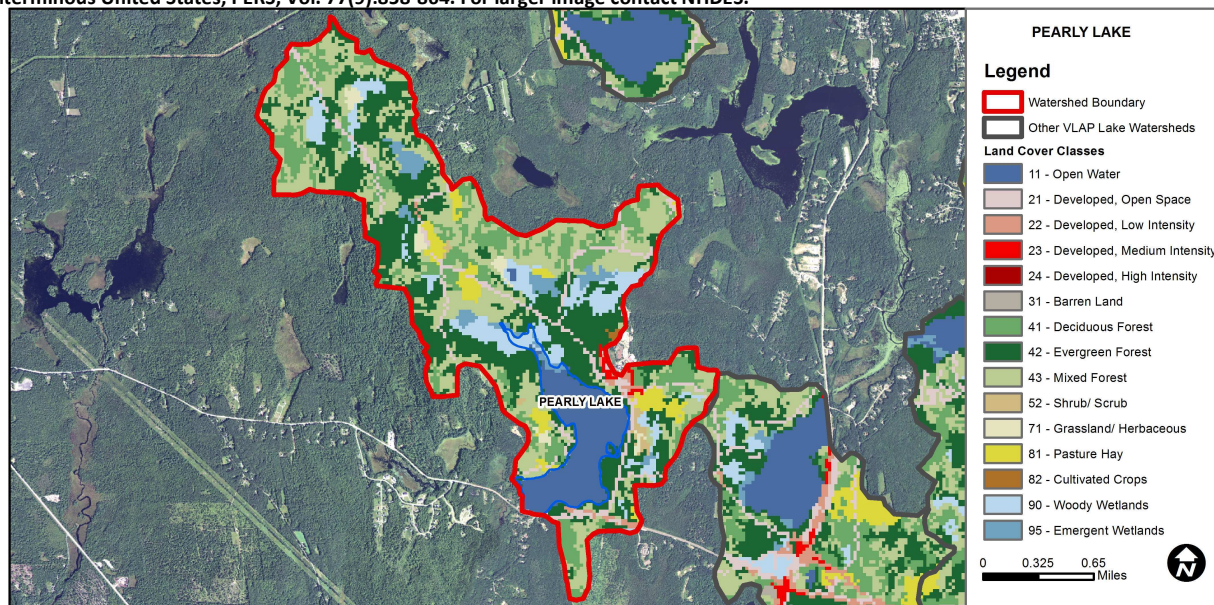
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	The calculated median is from 5 or more samples and is > indicator and the chlorophyll a indicator is exceeded.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	Oxygen, Dissolved	Good	There are at least 10 samples with one, but < 10% of samples, exceeding criteria.
	Dissolved oxygen satura	Slightly Bad	There are >10% of samples (minimum of 2), exceeding criteria.
	Chlorophyll-a	Slightly Bad	The calculated median is from 5 or more samples and is > indicator.
Primary Contact Recreation	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
	Cyanobacteria hepatoto	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Slightly Bad	There are >10% of samples (minimum of 2), exceeding indicator.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

PEARLY LAKE-PEARLY LAKE BEACH	Escherichia coli	Bad	There are >=1 exceedance(s) of the geometric mean and/or >=2 single sample criterion exceedances. One or more exceedance is >2X criteria.
PEARLY LAKE-PEARLY LAKE BEACH	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	8.94	Barren Land	0	Grassland/Herbaceous	1.1
Developed-Open Space	4.97	Deciduous Forest	14.3	Pasture Hay	3.43
Developed-Low Intensity	0.74	Evergreen Forest	27.77	Cultivated Crops	0.17
Developed-Medium Intensity	0.4	Mixed Forest	27.11	Woody Wetlands	7.59
Developed-High Intensity	0.01	Shrub-Scrub	0.61	Emergent Wetlands	2.86



VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

PEARLY POND, RINDGE

2014 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphics)

- ◆ **CHLOROPHYLL-A:** Chlorophyll levels were average in June and increased to elevated levels in July and August. However, chlorophyll levels remained less than algal bloom thresholds. Average chlorophyll level increased slightly from 2013 and was greater than the state median. Historical trend analysis indicates significantly decreasing (improving) chlorophyll levels since monitoring began. We hope to see this continue!
- ◆ **CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer) and Hypolimnetic (lower water layer) conductivity levels were approximately equal to the state median in June and then increased to slightly elevated levels in July and August. Epilimnetic chloride levels were greater than the state median and indicative of impacts from road salt, however chloride levels much less than the state standard for chronic chloride. Historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity since monitoring began. Bower Inlet conductivity and chloride was low and indicative of the forested sub-watershed. College Rd. Inlet conductivity was slightly elevated in July during low flow and chloride levels were slightly greater than the state median. Mountain Rd. and Outlet conductivity levels were average in June and then increased as the summer progressed and flows decreased; chloride levels were slightly greater than the state median and remained stable throughout the summer.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels were average in June and then increased to elevated levels by August. Average epilimnetic phosphorus remained stable with 2013 and was much greater than the state median. Historical trend analysis indicates highly variable epilimnetic phosphorus levels since monitoring began. Hypolimnetic phosphorus was average in June and then greatly elevated in July and August due to the release of phosphorus from bottom sediments as the summer progressed and dissolved oxygen levels were depleted. Bower Inlet phosphorus levels were slightly higher in June following a significant storm event and then were average in July and August. College Rd. Inlet phosphorus levels were elevated in July during low flow conditions. Mountain Rd. phosphorus levels were elevated and remained stable from June to August. Outlet phosphorus levels were average in June and July and elevated in August. Several additional phosphorus sampling events were conducted throughout the watershed to gauge insight into phosphorus loading to the pond. In general phosphorus samples collected in May were low to average for most stations, increased to elevated levels in August following a significant storm event, and then decreased to slightly elevated and average levels in November. RIB Wetland stations experienced elevated phosphorus levels regardless of date and conditions.
- ◆ **TRANSPARENCY:** Transparency was average for the pond and remained stable from June to July and then decreased slightly in August with the increased algal growth. Historical trend analysis indicates relatively stable transparency with moderate variability between years.
- ◆ **TURBIDITY:** Epilimnetic turbidity was low in June and then increased in July and August with the increased algal growth. Hypolimnetic turbidity was average in June and then increased as the summer progressed and organic compounds accumulated in hypolimnetic waters. Bower Inlet turbidity was slightly elevated in June following a significant storm event. College Rd. Inlet turbidity was slightly elevated in July during low flows. Mountain Rd. turbidity was elevated in June following the storm event and August during low flows. Outlet turbidity was elevated in June following the storm event.
- ◆ **pH:** Epilimnetic and Hypolimnetic pH levels were less than desirable range 6.5-8.0 units. Historical trend analysis indicates relatively stable epilimnetic pH with moderate variability between years. Tributary pH levels were also less than desirable and remained stable from June through August.
- ◆ **RECOMMENDED ACTIONS:** Maintain current monitoring program to assess phosphorus loading in additional years if necessary through the development of the Watershed Management Plan. The increased frequency and intensity of storm events highlights the importance of managing stormwater runoff from the watershed. Educate lake and watershed residents on ways to reduce stormwater runoff from their properties. Partner with DES' Soak Up the Rain NH Program to learn how to design and install stormwater best practices. For more information visit www.soaknh.org/. Keep up the great work!

Station Name	Table 1. 2014 Average Water Quality Data for PEARLY LAKE-RINDGE							
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	Total P ug/l	Trans. m NVS	Turb. ntu	pH
Epilimnion	2.3	8.63	22	83.7	24	1.13	2.13	6.04
Hypolimnion				88.5	59		5.41	5.83
Bower Inlet			3	14.6	20		1.13	5.41
College Rd Inlet			25	107.4	29		2.10	5.94
Mountain Rd			20	76.1	36		1.94	5.33
Outlet			23	85.8	23		2.52	6.03
Bower Inlet Upstream					15			
Forested Wetland Flow					135			
Hodge Pond Trail					35			
Old Jaffrey Rd. Flow					47			
RIB Rd. Outflow					18			
RIB Wetland N Central					272			
RIB Wetland Outflow					156			
RIB Wetland S East					967			
RIB Wetland West					235			
SSP2 Site					816			
Water Tower Stream					10			

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

Chloride: > 230 mg/L (chronic)

E. coli: > 88 cts/100 mL – public beach

E. coli: > 406 cts/100 mL – surface waters

Turbidity: > 10 NTU above natural level

pH: between 6.5-8.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.

Alkalinity: 4.9 mg/L

Chlorophyll-a: 4.58 mg/m³

Conductivity: 40.0 uS/cm

Chloride: 4 mg/L

Total Phosphorus: 12 ug/L

Transparency: 3.2 m

pH: 6.6

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Worsening	Data significantly increasing.	Chlorophyll-a	Improving	Data significantly decreasing.
pH (epilimnion)	Stable	Trend not significant; data moderately variable.	Transparency	Stable	Trend not significant; data moderately variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data highly variable.

